

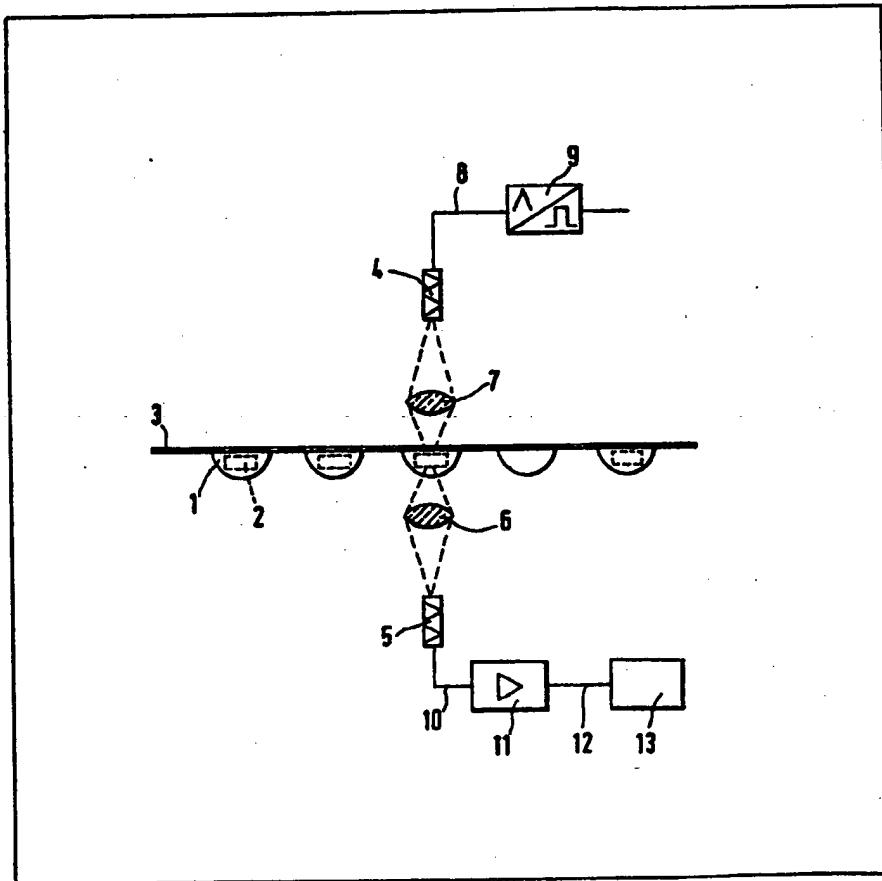
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(56) Documents cited  
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(54) Monitoring strip packages

(57) This invention relates to apparatus for monitoring tablet or other strip packages, formed from opaque foil, with the aid of optical-electrical means for checking the presence or absence of one or more of the tablets. To this end, at least one gallium arsenide radiator 4, intermittently energised by a pulse shaper 9, is

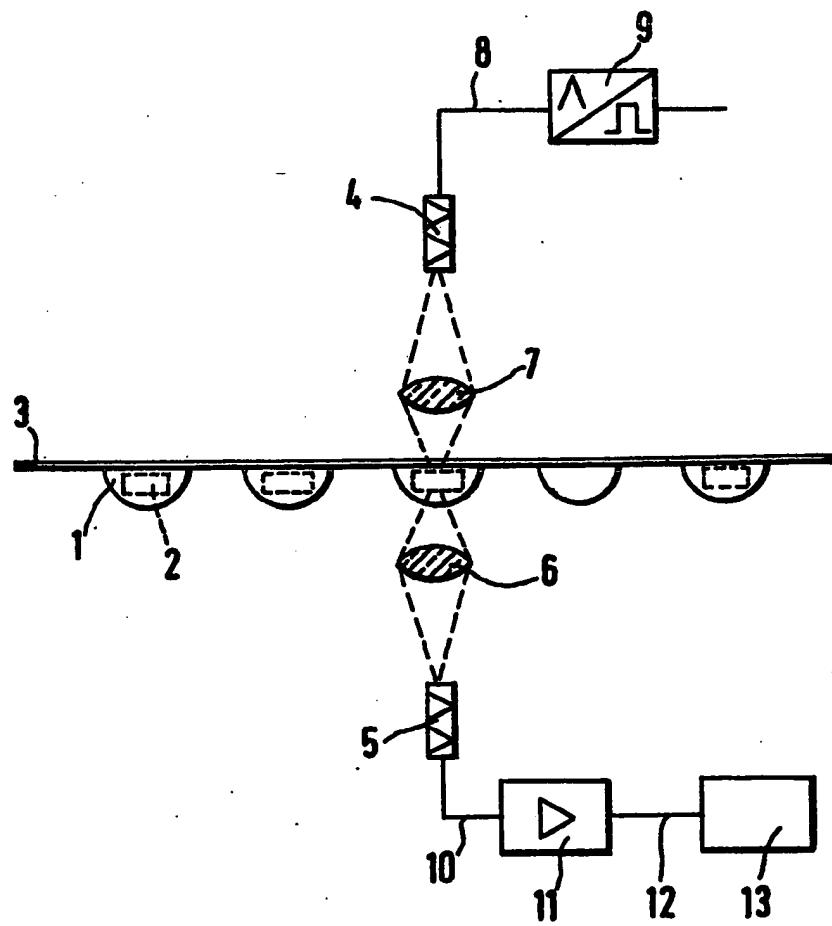
arranged above a strip of foil 3 provided with compartments or cups 1 for the reception of tablets 2. At least one corresponding receiver 5 is arranged beneath the strip 3, in line with the radiator 4. The output from the receiver 5 is fed, through an amplifier 11, to an ejector device 13 for ejecting a strip package from which one or more of the tablets is missing.



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**SPECIFICATION****Apparatus for monitoring strip packages containing tablets or the like****STATE OF THE ART**

5 Various monitoring methods and apparatus have been known for monitoring tablet strip-packages. Capacitively, mechanically or photo-electrically (transmitted light/reflex) operating monitoring devices are in use. The transmitted light method has proved to be of relatively simple construction and very reliable in operation. In this case, transmitters in the form of light sources are located above a strip of foil which has cups for the reception of tablets or the like and receivers in the form of light sensitive cells or the like are located beneath the said strip of foil. In so doing, the arrangement is generally so designed that a corresponding number of transmitters and receivers is provided for the number of cups which are later to form a packaging unit. Thus, if a tablet is missing from one or more cups then the particular receiver lights up and a pulse is transmitted to an appropriate evaluating device in accordance with the said illumination so that the corresponding packaging unit can be withdrawn at a location provided for the purpose. However, these established monitoring devices which are in use with a number of thermo-forming machines are only suitable when using translucent foils.

10 However, for various reasons, (protection against light, production of child-proof packages etc.) opaque foils are used to an ever increasing extent for the production of tablet strip-packages. Since these foils are still only partially light transparent, the receivers do not receive sufficient radiation from the usual light sources so that the receivers do not respond and these known devices cannot, therefore, be used in the processing, that is to say for monitoring, of opaque foils. However, what is worth endeavouring to provide is a monitoring device corresponding to the usual transmitted light-monitoring devices, which has a transmitter with such a high light density (radiation intensity) that, despite reflection and absorption losses (according to the colouring of the foil), the receiver still receives sufficient radiation.

**ADVANTAGES OF THE INVENTION**

In addition to the sufficient transmission of light through opaque foils, the apparatus in accordance with the invention comprising the characterising features of the claim has the advantage that gallium arsenide radiators have a practically unlimited life over the incandescent lamps which are now used as transmitters. Further advantages can be appreciated in the high pulse frequency, the low power loss, the narrowly confined radiation as well as the narrow radiation boundary angle.

**60 DRAWING**

An embodiment of the invention is illustrated in

the drawing and is described in more detail in the following specification.

**DESCRIPTION OF THE INVENTION**

65 As shown in the drawing, a transmitter 4 is located above a strip of foil 3 provided with cups 1 for the reception of tablets 2 or the like and a receiver 5 is located beneath the strip of foil 3. Optical means 6 and 7 are arranged respectively both between the transmitter 4 and the strip of foil 3 and between the receiver 5 and the strip of foil 3. The transmitter 4 designed as a gallium arsenide radiator is connected through a line 8 to a pulse shaper 9. The receiver 5 is in communication, through a line 10, an amplifier 11 and a further line 12, with an evaluating and ejecting device 13 for tablet strip-packages from which one or more tablets 2 are missing.

70 Intermittent operation of the gallium arsenide radiator is achieved through the pulse shaper 9 so that an illumination density (radiation intensity) is produced at such a level that despite reflection and absorption losses, which occur especially when monitoring opaque foils, the receiver still receives a radiation sufficient for evaluation. Only one embodiment for monitoring a cup 1 is shown in the drawing by way of example. Preferably, the apparatus is so designed that the number of transmitters 4 and receivers 5 correspond to the number of cups 1 which are later to form a packaging unit.

**CLAIMS**

1. Apparatus for monitoring, by optical-electrical means, the contents of strip packages formed from opaque foil and containing tablets or the like arranged in compartments along the length of the strip, in which at least one light transmitter is arranged on one side of the strip and at least one corresponding light-sensitive receiver is arranged on the other side of the strip, the or each transmitter being in the form of a gallium arsenide radiator arranged to be illuminated intermittently.
2. Apparatus according to claim 1, in which a plurality of radiators are arranged on one side of the strip and a corresponding number of receivers are arranged on the other side of the strip.
3. Apparatus according to claim 2, in which a radiator and a corresponding receiver are provided for each compartment in the strip.
4. Apparatus according to any preceding claim, in which the compartments are in the form of cups, the or each radiator being arranged above the cups and the or each receiver being arranged beneath the cups.
5. Apparatus according to claim 4, in which the cups are produced in the opaque foil by thermo-forming or the like.
6. Apparatus according to any preceding claim, in which the or each radiator is illuminated intermittently by a pulse shaper.
7. Apparatus according to any preceding claim, in which the output from the or each receiver is

fed to an ejecting device for strip packages from which one or more tablets or the like are missing.

8. Apparatus according to claim 7, in which the output from the or each receiver is fed to the

5 ejector device through an amplifier.

9. Apparatus for monitoring the contents of strip packages substantially as herein described with reference to the accompanying drawing.

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